

CLAIMS

1. A circuit board comprising:
 - an insulated substrate;
 - a conductor circuit formed on one side of said substrate; and
 - two-layer conductor posts electrically connected to said conductor circuit;
 - wherein each of said two-layer conductor posts is formed in a hole piercing said insulated substrate and comprises a projecting terminal having its one end connected to said two-layer conductor circuit and its other end projecting from the other side of said insulated substrate, and a metal coating layer covering the portion of said terminal that projects out from the other side of said insulated substrate.
2. A circuit board according to claim 1 wherein the metal coating layer is composed of at least one metal selected from the group consisting of gold, silver, nickel, tin, lead, zinc, bismuth, antimony and copper, or an alloy containing such metals.
3. A circuit board comprising:
 - an insulated substrate;
 - a conductor circuit formed on one side of said insulated substrate; and
 - two-layer conductor posts electrically connected to said conductor circuit;
 - wherein an adhesive layer having a function of flux is

provided on one or both sides of said insulated substrate.

4. A circuit board comprising:
 - an insulated substrate;
 - a conductor circuit formed on one side of said insulated substrate; and
 - two-layer conductor posts electrically connected to said conductor circuit; wherein a surface coating is provided on one side of said insulated substrate, said coating covering said conductor circuit with a part thereof left uncovered, and an adhesive layer having a flux function is provided on the other side of said insulated substrate.
5. A circuit board according to any one of claims 1 to 4 wherein said two-layer conductor posts contain copper and a metal or copper and an alloy.
6. A circuit board according to claim 3 or 4 wherein each of said two-layer conductor posts is formed in a hole piercing said insulated substrate, and comprises a protruding terminal of which one end is connected to said conductor circuit and the other end projects from the other side of said insulated substrate, and a metal coating layer covering the portion of said protruding terminal which projects from the other side of said insulated substrate.
7. A circuit board according to claim 6 wherein said metal coating layer is made of at least one metal selected from the group consisting of gold, silver,

nickel, tin, lead, zinc, bismuth, antimony and copper, or an alloy containing such metals.

8. A multilayer wiring board comprising a laminate of plural circuit boards including the one set forth in claim 1 or 2.

9. A multilayer wiring board comprising a laminate of plural circuit boards including the one set forth in
claim 3 or 4.

10. A multilayer wiring board comprising a laminate of plural circuit boards including the one set forth in any one of claims 1 to 4 and a circuit board comprising:

an insulated substrate;
a conductor circuit formed on both sides of
said insulated substrate;
a metallic layer formed covering a part of
said conductor circuit; and
a surface coating covering the portion of
said conductor circuit other than said metallic layer.

11. A multilayer wiring board comprising a laminate of plural circuit boards including the one set forth in claim 1 or 2, the one set forth in claim 3 or 4, and a circuit board comprising:

an insulated substrate;
a conductor circuit formed on both sides of
said insulated substrate;
a metallic layer formed covering a part of

said conductor circuit; and

a surface coating covering the portion of
said conductor circuit other than said metallic layer.

12. A multilayer wiring board in which the
circuit board set forth in any one of claims 1 to 4 is
joined to both sides of another circuit board set forth
below, and the conductor circuits of the respective
circuit boards are electrically connected at the
specified sites through said conductor posts, said
another circuit board comprising:

an insulated substrate;

a conductor circuit formed on both sides of
said insulated substrate;

a metallic layer formed covering a part of
said conductor circuit; and

a surface coating covering the portion of
said conductor circuit other than said metallic layer.

13. A multilayer wiring board in which a circuit
board set forth in claim 3 or 4 is joined to both sides
of another circuit board set forth below, a circuit
board set forth in claim 1 or 2 is joined to said both
circuit boards, and the conductor circuits of the
respective circuit boards are electrically connected at
the specified positions through said conductor posts,
said another circuit board comprising:

an insulated substrate;

a conductor circuit formed on both sides of
said insulated substrate;

a metallic layer formed covering a part of said conductor circuit; and

a surface coating covering the portion of said conductor circuit other than said metallic layer.

14. A multilayer wiring board according to any one of claims 11 to 13 wherein said surface coating includes an adhesive layer.

15. A multilayer wiring board according to claim 7 having a multilayer portion comprising a laminate of plural circuit boards, and a single-layer portion to which at least one circuit board in said multilayer portion extends therefrom.

16. A multilayer wiring board according to claim 15 wherein the circuit board constituting said single-layer portion is a flexible circuit board.

17. A multilayer flexible wiring board comprising
(i) plural single-sided wiring boards having a wiring pattern formed on one side of a substrate made of an insulating material and two-layer conductor posts made of copper and a metal or copper and an alloy, each said conductor post projecting from said wiring pattern to the side of said substrate opposite from said wiring pattern, with the substrates other than that of the outermost layer having, on the side opposite from said conductor posts, the pads for making connection to the conductor posts, and said wiring pattern having no surface coating, (ii) a flexible wiring board having on at least one side thereof the pads for connection to

said conductor posts and comprising a wiring pattern with surface coating applied on the flexible portion but no surface coating applied on the multilayer portion, and (iii) an adhesive layer having a flux function whereby the respective boards are laminated integrally, wherein said conductor posts and pads are connected by a metal or an alloy through the medium of said adhesive layer, and said wiring patterns are electrically connected.

18. A multilayer flexible wiring board according to claim 17 wherein said flexible wiring board is a severed individual piece.

19. A multilayer flexible printed wiring board according to claim 17 or 18 wherein the metal is at least one of gold, silver, nickel, tin, lead, zinc, bismuth, antimony and copper.

20. A multilayer flexible printed wiring board according to any one of claims 17 to 19 wherein the alloy comprises at least two of tin, lead, silver, zinc, bismuth, antimony and copper.

21. A method of producing a multilayer flexible wiring board comprising the steps of: boring a substrate made of an insulating material, and then forming on the bored side of said substrate the protruding two-layer conductor posts made of copper and a metal or copper and an alloy; forming a wiring pattern on the side of said substrate opposite from said two-layer conductor posts; forming an adhesive

layer having a flux function over the whole surface of each of the substrates other than that of the outermost layer on the wiring pattern side having the pads opposite from said two-layer conductor post side by lamination or printing, thereby forming a single-sided wiring board; forming a flexible wiring board comprising a wiring pattern having on at least one side thereof the pads for joining to said two-layer conductor posts; forming an adhesive layer having a flux function on the wiring pattern side having the pads of said flexible wiring board over the whole surface or partially thereof by lamination or printing; and heat-press bonding said two-layer conductor posts and said pads through the medium of said adhesive layer.

22. Multilayer flexible wiring boards that can be obtained from the method set forth in claim 21.